TITLE OF THE INVENTION

REDUCING JITTER IN MIXED-SIGNAL INTEGRATED CIRCUIT DEVICES

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a divisional of application number 09/987,279, filed November 14, 2001, now ~~allowed~~ U. S. Patent 6,628,219.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to reducing jitter in mixed-signal integrated circuit devices, for example in digital-to-analog converters (DACs). Such integrated circuit devices include a mixture of digital circuitry and analog circuitry.

2. Description of the Related Art

Fig. 1 of the accompanying drawings shows parts of a conventional DAC of the so-called "current-steering" type. The DAC 1 is designed to convert an m-bit digital input word (D1-Dm) into a corresponding analog output signal.

The DAC 1 contains analog circuitry including a plurality (n) of identical current sources 2_1 to 2_n, where $n=2^m-1$. Each current source 2 passes a substantially constant current I. The analog circuitry further includes a plurality of differential switching circuits 4_1 to 4_n corresponding respectively to the n current sources 2_1 to 2_n. Each differential switching circuit 4 is connected to its corresponding current source 2 and switches the current I produced by the current source either to a first terminal, connected to a first connection line A of the converter, or a second terminal connected to a second connection line B of the converter.

Each differential switching circuit 4 receives one of a plurality of digital control signals T1 to Tn (called "thermometer-coded signals" for reasons explained hereinafter) and selects either its first terminal or its second terminal in accordance with the value of the signal concerned. A first output current I_A of the DAC 1 is the sum of the respective currents